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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,210	03/22/2004	Ga-Lane Chen		3288
25859	7590	04/12/2005	EXAMINER	
WEI TE CHUNG			PADGETT, MARIANNE L	
FOXCONN INTERNATIONAL, INC.			ART UNIT	
1650 MEMOREX DRIVE			PAPER NUMBER	
SANTA CLARA, CA 95050			1762	

DATE MAILED: 04/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/807,210

Applicant(s)

CHEN, GA-LANE

Examiner

Marianne L. Padgett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 3/22/04 & 2/14/05.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 14-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/22/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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1. Applicant's election without traverse of Group I, method claims 1-13 in the reply filed on February 14, 2005 is acknowledged.

2. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the claims, abbreviations or acronyms, such as "EMI" should be written out in full on their first use in a claim sequence to provide clear meaning in the claims, and avoid confusion with meaning other than intended.

Claim 2 is vague and indefinite as the limitations not positively stated, i.e. "should be" does not require the temperature to actually be maintained in the stated range, hence it is uncertain whether or not the claim is intended to require this range.

In claim 3 between "1x10<sup>-6</sup> and 1x10<sup>-8</sup> Torr" appears to have typographical errors that leave out the superscripting of the exponents, when considered in light of [0018] and claim 3 of the original disclosure (similar problems may also be noted in withdrawn claims).

3 The disclosure is objected to because of the following informalities: Proof reading in the specification is recommended, especially for non-idiomatic English phrasing. For example, in [0014] at the bottom of page 4, is "a substrate accelerating power source 12" really what's intended? Is the substrate really being caused to move faster by source 12 or are ions (as suggested [0017] on page 6) actually being accelerated? On page 7, line 2 --electron-- appears to be misspelled. This is not intended to be a complete listing.

Appropriate correction is required.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-4 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (4,544,571), in view of Gabower (6,570,085 B1), optionally considering Motoki et al (5,462,771).

In Miller, see the abstract; flowchart; Fig. 2; col. 1, lines 45- col. 2, lines 32 & 53-65; col. 3, lines 1-25 & 50-56 for making electromagnetic interferences (EMI) shielding by glow discharge treating a substrate surface (polymeric) to activate, where the gas used is air (hence contains oxygen and is considered to read an oxygen plasma cleaning), then vacuum vapor plating at pressures below  $5 \times 10^{-5}$  torr, first an adhesion layer (Cr or stainless steel), second a shielding layer (Cu or Al), then finally a protective layer (Cr or stainless steel), Miller differs from applicant's claims by teaching generic vapor plating with no details on the vaporization technique, while the claims require ion plating, a specific vacuum vapor deposition process.

Gabower, who is also making EMI shielding on plastic substrates notes that useful vacuum metallization techniques are inclusive of thermal evaporation, sputtering, ion plating, electron beam [evaporation], etc. (abstract; col. 3, lines 60-63), and also teaches pretreatment with ionized gas, where the gas used in this may be oxygen, before the metalization step, such as Al, Cu or Ag deposition (col. 5, lines 10-35 and col. 6, lines 12-27). Particular oxygen flow rates would have been determine via routine experimentation, depending on particular chamber configuration, exhaust rate, etc. While Gabower does

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not teach a preference for any particular metallization technique per se, they do teach the need to control parameters, such as temperature, etc., to limit stress and damage such as warpage to the substrate (col. 7 - 8+), and note on col. 13, line 1-9, that Cu deposited on to substrate has a problem with uniform adhesion, but is usually otherwise the superior shielding metal when compared with Al or Ag. However, it is noted that the primary reference dealt with the adhesion issue, but does under score the known need for an adhesion layer when using a vapor deposited Cu layer.

It would have been obvious to one of ordinary skill in the art to employ analogous O-plasma pretreatments, as they serve the same purpose, and that it would have been obvious that any of the known vapor deposition techniques as suggested as equivalent by Gabower would have been effective in Miller, providing care was taken to consider the critical factors to be considered in any vacuum vapor deposition process (col. 8, lines 30-49).

Optionally, Motoki et al provides cumulative considerations in teaching deposition of single or multiple metal layers as discussed in the primary or secondary references, where initial plasma treatment is also taught (although with an inert gas), but the vaporized metal are deposited with high frequency plasma excitation to ionize which is said to cause improved adhesion due to activation by the plasma (as compared to vacuum deposition). See the abstract; col. 1, lines 18-36 & 46-60+; col. 2, lines 9-31, summary; col. 3, lines 50- col. 4, line 15+ and 44-55+. Due to the taught improved adhesion due to the plasma excitation, i.e. ionization, effect on the surface interfaces compared to generic vacuum deposition techniques, it would have been obvious to one of ordinary skill in the art, that of the listing of various vapor deposition techniques in Gabower, that those similarly involving ionization effect on the surface being deposited would have been expected to be especially preferable due to expected improvement in adhesion between layers. Note Motoki et al's particular discussion on improvement in Cu/Ni-Cr interface adhesion.

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6. Claims 1-3 and 5-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller discussed above in Section 5), in view of Marutsuka (2002/0071934 A1) and Motoki et al (also discussed in Section 5).

Marutsuka, who is also making a form of EMI shielding, teaches a metallic layer deposited by a dry plating technique, such as vapor deposition, sputtering or ion plating, that may be a single layer or a composite layer of 2 or more, with Cu, Ni, Fe, Cr, Ti, Al, Au, Ag, etc. listed, with Cu preferred for shielding, but also recommended to have copper held between metals with high corrosion-proofness, with Cr or Ni mentioned as preferred for this function ([0020]; [0035-36]; [0040-41]).

It would have been obvious to one of ordinary skill from the above teachings of Miller and Marutsuka ('934), that for EMI vapor deposited metal layers, ion plating is an equivalent technique, with the further teachings of Motoki et al providing further motivation of expected improved adhesion due to ion bombardment that will be present therewith.

Miller differs from dependent claims 5, 8 and 13 by not teaching Ni as a possible first layer, however Marutsuka reveals that due to protective effects from corrosion, that Ni can be a desirable layer on either side of the middle copper layer. It would have been obvious to one of ordinary skill in the art, considering Motoki et al's teaching on the ion bombardment effect of plasma environment to improve adhesion of the metal layers to both substrate and especially between Ni and Cu, that the suggestion of Ni as a first layer would have been expected to be equivalent to Miller's taught Cr, due to the shown equivalence and expected adhesion.

7. Copending case 10/813,409 is noted to be directed to the vacuum vapor deposition of sputtering for EMI coatings of potentially like materials, but currently the present case differs by requiring the multiple layers and ion plating (which can overlap with sputtering but does not necessarily), while the other application has sputter process details that differs.

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8. Other art of interest for EMI shield layers and ion plating used therewith include the Japanese patents to Adachi et al (JP 5-345987); Oike et al (2-82696); Matsui (JP 2000-68678); and JP 7-231196.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on Monday-Friday from about 8:30 a.m. to 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached at (571) 272-1423. 5 The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M.L. Padgett/dh  
March 25, 2005

April 11, 2005



MARIANNE PADGETT  
PRIMARY EXAMINER